

Amendments to the Claims

This listing of the claims replaces all prior versions and listing of the claims in the present application.

Listing of Claims

1-35. (canceled)

36. (currently amended) A data network implemented by a first network level (104) having a first addressing scheme and at least a second network level (108) having a second addressing scheme, each network level provides connectivity over at least one network domain, the data network comprising:

a first group of Network Resource Managers, NRMs, (b-d) that is arranged to control the resources of the first network level and a second group of NRMs (e-g) that is arranged to control the resources of the second network level,

wherein the NRMs of the first group (b-d) and second group (e-g) comprise means for communicating on a common network level and for exchanging resource requests by using the first addressing scheme, and

wherein the NRMs (e-g) of the second group further comprise means for performing an address mapping between the first and second addressing schemes so that a set of resources that is used by a reservation in the second group, controlled and known by the second group, are aggregated into a single resource in the first group of NRMs.

37. (previously presented) The data network according to claim 36, wherein the first network level is the Internet Protocol (IP) layer.

38. (previously presented) The data network according to claim 36, wherein the second network level is a link protocol layer.

39. (previously presented) The data network according to claim 37, wherein the second network level is a second protocol layer controlling an overlay network on top of said IP layer.

40. (previously presented) The data network according to claim 37, wherein the second network level is a second IP layer controlling an overlay network on top of said IP layer.

41. (previously presented) The data network according to claim 40, further comprising a third network level having a third addressing scheme, the resources of said third network level are controlled by a third group of NRMs comprising means for exchanging resource requests with NRMs of the first network level using the first addressing scheme.

42. (previously presented) The data network according to claim 41, wherein the NRMs of the third group further comprise means for performing an address mapping between the first and third addressing schemes.

43. (previously presented) The data network according to claim 41, wherein the third network level is a third protocol

layer controlling an overlay network on top of said IP layer.

44. (previously presented) The data network according to claim 41, wherein the third network level is a second IP layer controlling an overlay network on top of said IP layer.

45. (previously presented) The data network according to claim 41, wherein the third network level is a third protocol layer controlling an overlay network on top of said IP layer.

46. (previously presented) The data network according to claim 41, wherein the third network level is a link protocol layer.

47. (previously presented) The data network according to claim 36, wherein the NRMs within at least one of said groups are arranged in a hierarchical structure arranged to communicate with each other.

48. (previously presented) The data network according to claim 36, wherein each of the NRMs is a logically centralized unit in a network.

49. (previously presented) The data network according to claim 48, wherein said logically centralized unit is distributed or backed up over several physical servers

50. (previously presented) The data network according to claim 36, wherein the data network in at least one of the network levels comprises a Network Controller (NC) comprising means for receiving a request from an NRM and means for obtaining detailed

information including at least one of topology maps, traffic measurement information, and alarms of the network domain that is controlled by said NRM in response to said request.

51. (previously presented) The data network according to claim 49, wherein the data network in at least one of the network levels comprises a Device Controller (DC) comprising means for receiving a request from the NC and means for controlling vendor specific node technologies in response to said request.

52. (previously presented) The data network according to claim 51, wherein the DC is co-located with the NC in at least one of the network domains.

53. (currently amended) A method in a data network implemented by a first network level having a first addressing scheme and at least a second network level having a second addressing scheme, each network level provides connectivity over at least one network domain, the method comprising the steps of:

controlling (201) the resources of the first network level by a first group of Network Resource Managers, NRMs, and

controlling (202) the resources of the second network level by a second group of NRMs, wherein the first group and the second group of NRMs comprises means for communicating on a common network level,

exchanging (203) resource requests between NRMs of the first and second group by using the first addressing scheme, and

performing (204) an address mapping between the first and second addressing schemes so that a set of resources that is used by a reservation in the second group, controlled and known by the second group, are aggregated into a single resource in the first group of NRMs.

54. (previously presented) The method according to claim 53, wherein the first network level is the Internet Protocol (IP) layer.

55. (previously presented) The method according to claim 54, wherein the second network level is a link protocol layer.

56. (previously presented) The method according to claim 54, wherein the second network level is a second IP layer controlling an overlay network on top of said IP layer.

57. (previously presented) The method according to claim 54, wherein the second network level is a second protocol layer controlling an overlay network on top of the IP layer.

58. (previously presented) The method according to claim 53, wherein the data network further comprises a third network level having a third addressing scheme and the method comprises the further step of:

controlling the resources of said third network level by a third group of NRMs and

exchanging resource requests between any of the NRMs of the first and second network level using the first addressing scheme.

59. (previously presented) The method according to claim 58, further comprising the step of: performing an address mapping between the first and third addressing schemes.

60. (previously presented) The method according to claim 59, wherein the third network level is a third protocol layer controlling an overlay network on top of the IP layer.

61. (previously presented) The method according to claim 59, wherein the third network level is a second IP layer controlling an overlay network on top of said IP layer.

62. (previously presented) The method according to claim 59, wherein the third network level is a link protocol layer.

63. (previously presented) The method according to claim 53, wherein the NRMs within at least one of said groups are arranged in a hierarchical structure arranged to communicate with each other.

64. (currently amended) The method according to to claim 53, wherein each of the NRMs is a logically centralized unit in a network.

65. (previously presented) The method according to claim 64, wherein said logically centralized unit is distributed or backed up over several physical servers

66. (previously presented) The method according to claim 53, wherein the data network in at least one of the network levels comprises a Network Controller (NC), wherein the method comprises

the further steps of:

receiving by the NC a request from an NRM and
obtaining detailed information including at least one of
topology maps, traffic measurement information, and alarms of the
network domain that is controlled by said NRM in response to said
request.

67. (previously presented) The method according to claim 66,
wherein the data network in at least one of the network levels
comprises a Device Controller (DC), wherein the method further
comprises the step of:

receiving by the DC a request from the NC and
controlling vendor specific node technologies in response to
said request.

68. (previously presented) The method according to claim 67,
wherein the DC is co-located with the NC in the at least one of
the network domains.

69. (canceled)

70. (previously presented) A computer program product stored
on a computer usable medium, comprising readable program for
causing a computer, within a router or a server in the data
network to control an execution of the steps of claim 53.